Small Business Innovation Research/Small Business Tech Transfer

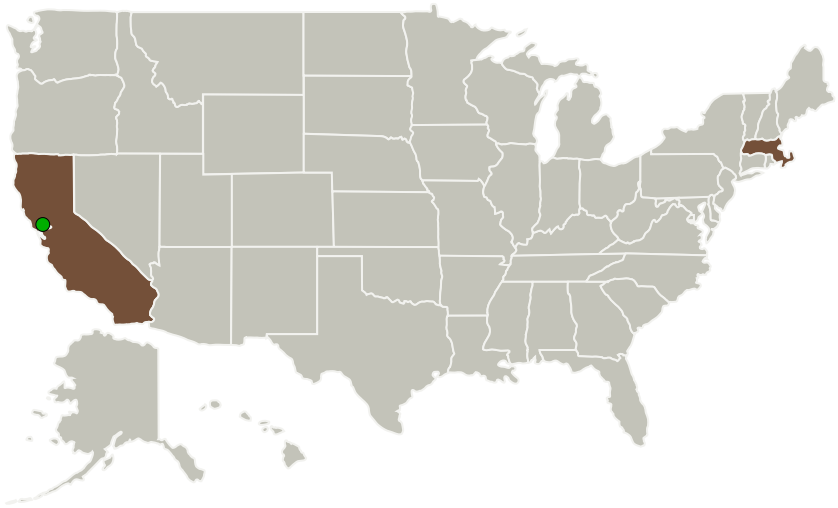
Network-Based Parallel Retrieval Onboard Computing Environment for Sensor Systems Deployed on NASA Unmanned Aircraft Systems, Phase I

Completed Technology Project (2013 - 2013)

Project Introduction

Remote Sensing Solutions proposes to develop the Network-based Parallel Retrieval Onboard Computing Environment for Sensor Systems (nPROCESS) for deployment on NASA's unmanned aircraft systems (UAS). The nPROCESS will provide a compact, efficient, reconfigurable computing environment that will achieve unparalleled real-time data processing, acquisition and distribution to provide new observations and improved sensitivity; provide a test-bed for measurement and algorithm development and testing for future mission risk reduction and demonstration; produce critical information for real-time decision making; and facilitate a path to reduce risks and installation / operational costs for deployment of new and existing sensors on NASA UAS platforms. The proposed innovations to realize nPROCESS are: (1) reconfigurable, object orientated system architecture that will provides far greater customization and expansion, (2) modularity at the hardware, firmware and software levels to adapt to the sensors needs at minimum cost and (3) high fidelity parallel processing and data distribution capabilities. Deployed with the HIWRAP on the NASA Global Hawk, nPROCESS will provide higher quality and real-time mapping of the three-dimensional wind profiles, ocean vector surface maps and precipitation winds within tropical cyclones.

Primary U.S. Work Locations and Key Partners



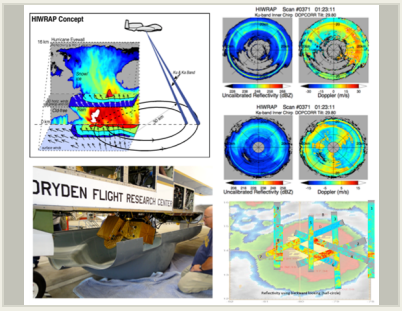


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Table of Contents

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Organizations Performing Work	Role	Type	Location
Remote Sensing Solutions, Inc.	Lead Organization	Industry	Barnstable, Massachusetts
Ames Research Center(ARC)	Supporting Organization	NASA Center	Moffett Field, California

Primary U.S. Work Locations	
California	Massachusetts

Project Transitions

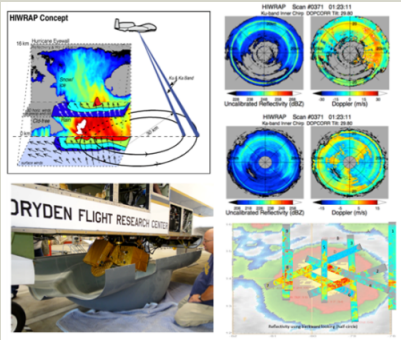
May 2013: Project Start

November 2013: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/138349)*

Images



Project Image
Network-based Parallel Retrieval Onboard Computing Environment for Sensor Systems Deployed on NASA Unmanned Aircraft Systems *(https://techport.nasa.gov/image/134614)*

Organizational Responsibility

Responsible Mission Directorate:
Space Technology Mission Directorate (STMD)

Lead Organization:
Remote Sensing Solutions, Inc.

Responsible Program:
Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:
Jason L Kessler

Program Manager:
Carlos Torrez

Principal Investigator:
James R Carswell

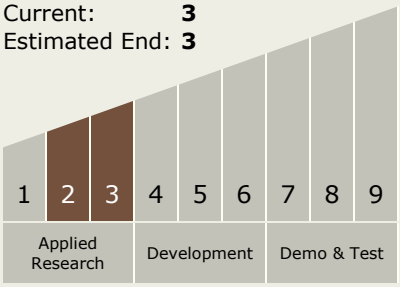
Co-Investigator:
James Carswell

Network-Based Parallel Retrieval Onboard Computing Environment for Sensor Systems Deployed on NASA Unmanned Aircraft Systems, Phase I

Completed Technology Project (2013 - 2013)

Technology Maturity (TRL)

Start: **2**
Current: **3**
Estimated End: **3**



Technology Areas

Primary:

- TX16 Air Traffic Management and Range Tracking Systems
  - TX16.4 Architectures and Infrastructure

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System